

CLAIMS:

1. An antenna comprising a plurality of conductive loops to produce an electromagnetic field for radio frequency identification (RFID) communication with RFID tags, wherein the conductive loops are spaced apart at least a distance D that is selected based on a dimension of the RFID tags with which the antenna communicates.
2. The antenna of claim 1, wherein the distance D is selected to exceed a maximum dimension of the RFID tags.
3. The antenna of claim 1, wherein the RFID tags have a dimension of length M , and the distance D between each of the plurality of conductive loops is selected such that $D \geq M$.
4. The antenna of claim 1, wherein $D \geq 2.54$ cm.
5. The antenna of claim 1, wherein $D \geq 5.08$ cm.
6. The antenna of claim 1, wherein the plurality of conductive loops form a dual-loop structure having an inner loop and an outer loop.
7. The antenna of claim 1, wherein the plurality of conductive loops are electrically coupled so that a common current flows through the loops.
8. The antenna of claim 7, wherein the plurality of conductive loops are located in parallel planes and formed with concentric traces, and the plurality of conductive loops are electrically coupled so that the common current flows through the loops in the same direction.
9. The antenna of claim 1, wherein the plurality of conductive loops are formed in a single printed circuit board.

10. The antenna of claim 1, further comprising a tuning circuit for tuning the plurality of loops to a single operating frequency.

11. The antenna of claim 10, wherein the tuning circuit tunes the plurality of antennas to the operating frequency of approximately 13.56 megahertz (MHz).

12. A radio frequency identification (RFID) system comprising:
an RFID tag associated with an article; and
an antenna having a plurality of conductive loops to produce an electromagnetic field for communication with the RFID tag, wherein the conductive loops are spaced at least a distance that is selected based at least in part on a dimension of the RFID tag.

13. The RFID system of claim 12, further comprising:
an RFID interrogation device coupled to the antenna, wherein the interrogation device interrogates the RFID tag to obtain information regarding the article; and
a computing device to process the information retrieved from the RFID interrogation device.

14. The RFID system of claim 12, wherein the plurality of conductive loops are electrically coupled so that the interrogation device drives a common current through the loops.

15. The RFID system of claim 14, wherein the plurality of conductive loops are formed with concentric traces, and the plurality of conductive loops are electrically coupled so that the common current flows through the loops in the same direction.

16. The RFID system of claim 12, wherein each of the conductive loops are spaced at least a distance D that is selected to meet or exceed a maximum dimension of the RFID tag.

17. The RFID system of claim 12, wherein the RFID tag has a dimension of length M , and the distance D between each of the plurality of conductive loops is selected such that $D \geq M$.

18. The RFID system of claim 17, wherein $D \geq 2.54$ cm.

19. The RFID system of claim 17, wherein $D \geq 5.08$ cm.

20. The RFID system of claim 12, wherein the plurality of conductive loops form a dual-loop structure having an inner loop and an outer loop.

21. The RFID system of claim 12, wherein the antenna has a substantially planar form.

22. The RFID system of claim 21, further comprising a substantially-contiguous conductive shield positioned around the antenna and within a plane parallel to the antenna.

23. The RFID system of claim 21, wherein the conductive shield shapes the electromagnetic field to extend substantially in a direction perpendicular to the antenna, and prevents the electromagnetic field from forming substantially over the conductive shield.

24. The RFID system of claim 23, wherein the conductive shield comprises planar conductive regions oriented to form a non-shielded inner region, and further wherein the antenna is disposed within the non-shielded inner region and parallel to the planar conductive regions.